TYPE STUDIES IN THE HYDNACEAE[1]—VII. THE GENERA ASTERODON AND HYDNOCHAETE

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The genus *Asterodon* is monotypic, having been established by Patouillard in 1894 on *A. ferruginosum* Pat.[2] The genus may be characterized as follows:

Hymenophore epixylous, perennial, wholly resupinate, separable, umber to fulvous; substance dry, fibrous, concolorous; hymenium setulose with reddish straight, simple or branched setae; teeth slender, terete, tapering; spores hyaline, smooth; hyphae slender, somewhat rigid, non-septate.

The presence and character of the setae is one of the distinguishing features of the genus. They are modified free ends of single hyphae which may project as simple spines or may branch at right angles into three or four spines giving a stellate appearance. The end of the hypha in either case has the walls thickened and becomes darker, more reddish in color and tapers to a sharp point. These should by no means be called cystidia as they are distinctly spine-like and not at all of the form of sacs or cysts. It is to be observed that the term cystidium has come to be used very loosely and inaccurately in some late mycological literature and is frequently employed where the term seta should be used.

In 1897, Charles H. Peck founded his genus *Hydnochaete* on *H. setigera* Peck[3] a single species which proves to be identical with *Asterodon ferruginosum* Pat. *Hydnochaete* Peck is, therefore, a typonym of *Asterodon* Pat. The name *Hydnochaete,* however, had been previously used by Bresadola. Aware of this fact and not knowing the relation of Peck's genus to *Asterodon* Pat., Saccardo in 1898 proposed the name *Hydnochaetella*[4] for Peck's

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[2] Pat. Bull. Soc. Myc. 10: 130. *Pl. 5.* 1894.

[3] Peck, Ann. Rep. N. Y. State Mus. 50: 113. 1897.

[4] Sacc. Tab. Com. Gen. Fung. 11. 1898.

genus and published the combination *Hydnochaetella setigera* (Peck) Sacc., making *Hydnochaetella* Sacc. another typonym of *Asterodon* Pat.

In 1896, Bresadola published the genus *Hydnochaete* as a monotypic genus based on *H. badia* Bres.,[5] a species from Brazil, thus antedating Peck in the use of the name. As *Hydnochaete* Bres. is also characterized by the presence of reddish setae, some confusion has arisen in respect to these genera. Bresadola expressly states that his genus *Hydnochaete* is near but distinct from *Asterodon* Pat. He also remarks that he has three forms of the species *H. badia,* the first "perfecte hydnoidea"; the second "raduloidea"; and the third "irpicoidea." Having received from Bresadola by his generous kindness authentic material of his *H. badia,* presumably a part of the original collection, we have had the opportunity of examining the characters of this interesting species.

In respect to substance, development of the hymenophore, and the character of the setae, the species appears to be distinctly congeneric with *Hydnoporia fuscescens* (Schw.) Murrill. It may also be noted that the latter species is quite variable in the development of the hymenial surface and may often be described as hydnoid, or raduloid, or irpicoid, or even polyporoid. Considering the highly variable character of both these species, the question may be raised as to whether they are specifically distinct. We are familiar with the Schweinitzian species, which is abundant in North America, and, while the Bresadolan material is not in sufficient quantity to settle the matter beyond all doubt, we believe they are distinct. *Hydnochaete badia* Bres. has a thicker subiculum and is darker colored, being umbrinous to badious within and gray-brown or fuscous on the hymenial surface, while *Hydnoporia fuscescens* (Schw) Murrill is more fulvous both within and without.

It may be noted that the setae in *Hydnochaete* Bres. are essentially different from those in *Asterodon* Pat. In the former, there are no branched or stellate forms and the seta is not simply the modified pointed tip of a single hypha. On the contrary, they are much larger than the hyphae and appear to be a distinct morphological structure, but how they originate or what their rela-

[5] Bresadola, Hedwigia 35: 287. 1896.

tion may be to the hyphae could not be definitely determined, and probably the question could only be answered by tracing out their development in special cultures.

There remains yet to be discussed the correct name of the Schweinitzian species. A plant was described by Schweinitz in 1822 under the name *Sistotrema olivaceum,*[6] which was undoubtedly a pileate form of this same species. A specimen in the Schweinitz herbarium at Philadelphia which has all the characters of this species, including the setae, is there marked "540–31 *Irpex cinnamomeus* Epic. 19. *Hydnum olivaceum* Schw. On decaying brush. Salem." In the commentary on Schwenitz's work by Berkeley and Curtis,[7] this very specimen is commented on as "540 *H. olivaceum* Schwein.!" with the remark that it belonged to *Irpex cinnamomeus.*

In the herbarium of E. Fries at Upsala, is to be found a specimen marked "*Hydn. olivaceum* L. v Schweinitz," a specimen undoubtedly received by Fries from Schweinitz. This has all the characters of the species under discussion, including the setae. This specimen also has a critical note appended to it by Bresadola, "Non differt ab Irpici cinnamomeo & fuscescente."

As to *Irpex cinnamomeus* Fries, nothing that could be regarded as a true type was found at Upsala. However, all the specimens there placed under this name were communicated by Ellis from North America through De Thümen and were clearly our American plant with the characteristic teeth and setae.

There is probably no type specimen of *Sistotrema fuscescens* Schw. in existence, but the forms we are now discussing have been more commonly known to American mycologists under the specific name *fuscescens* either as *Hydnum fuscescens* or as *Irpex fuscescens.* In the Schweinitz Herbarium, there is a specimen marked "580–7 Syn. Fung. I. cinnamomeus Epic. 19. Irpex fuscescens Schw. Beth." which is unquestionably the same species that we are now discussing.

We append the correct names of the species here discussed, with their synonymy. It needs only to be added that *Hydnochaete* Bres. should be placed in the family Polyporaceae as treated by

[6] Schw., Schr. Nat. Ges. Leipzig 1: 101. 1822.

[7] Jour. Acad. Nat. Sci. II. 3: 215–218. 1856.

Murrill in NORTH AMERICAN FLORA, although under the Friesian system it would doubtless be placed in the Hydnaceae as part of the old genus *Irpex*.

ASTERODON FERRUGINOSUM Pat. Bull. Soc. Myc. Fr. **10**: 130. *pl. 5*. 1894.

Hydnochaete setigera Peck, Ann. Rep. N. Y. State Mus. **50**: 113. 1897.

Hydnochaetella setigera Sacc. Tab. Com. Gen. Fung. 11. 1898.

HYDNOCHAETE BADIA Bres. Hedwigia **35**: 287. 1896.

HYDNOCHAETE OLIVACEUM (Schw.)

Sistotrema olivaceum Schw. Schr. Nat. Ges. Leipzig **1**: 101. 1822.

Sistotrema fuscescens Schw. Schr. Nat. Ges. Leipzig **1**: 102. 1822.

Hydnum olivaceum (Schw.) Fries, Elench. Fung. **1**: 134. 1828.

Irpex cinnamomeus Fries, Epicr. Myc. 524. 1838.

Hydnoporia fuscescens (Schw.) Murrill, N. Am. Flora **9**: 3. 1907.

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